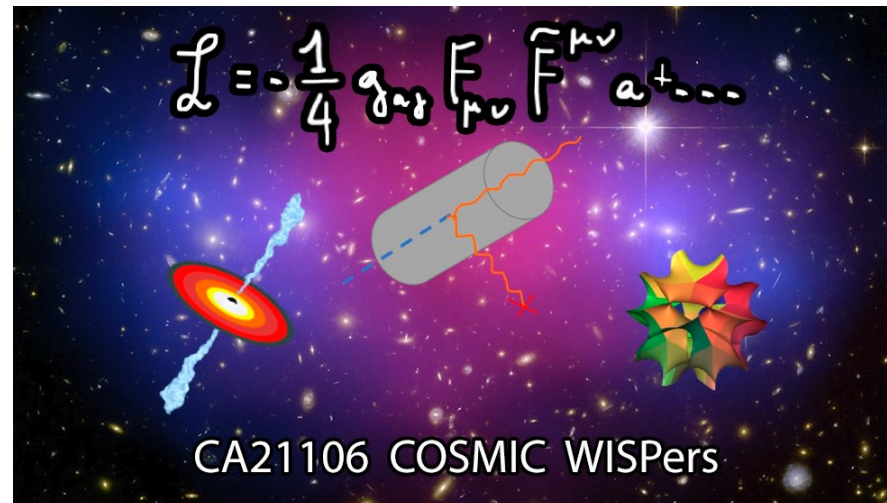
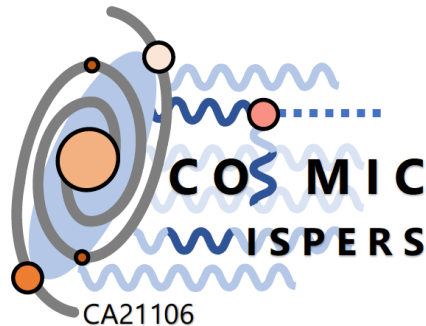


## COST ACTION CA21106

### COSMIC WISPerS in the Dark Universe:

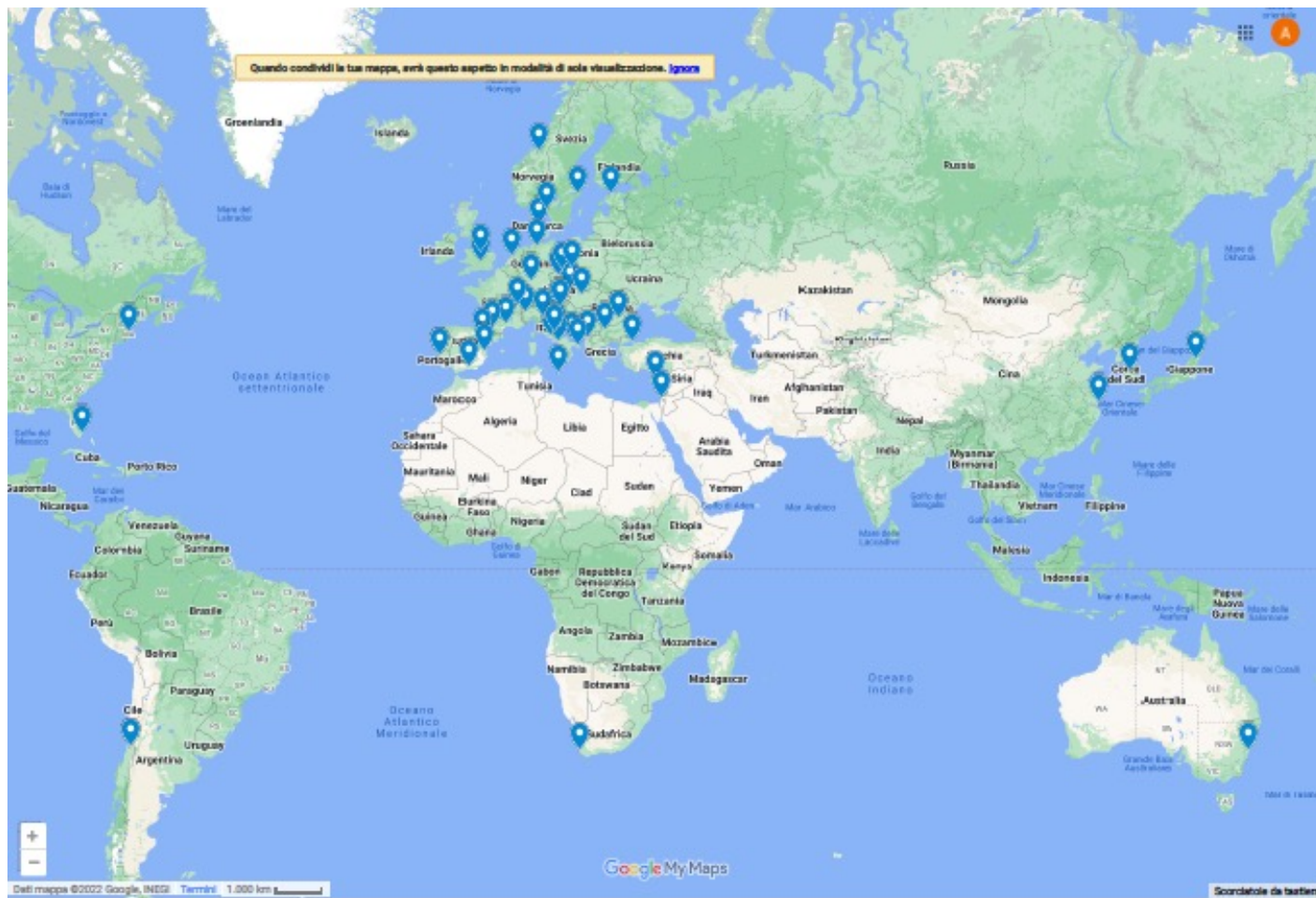
### Theory, astrophysics and experiments

Alessandro Mirizzi  
(Bari Univ. & INFN, Italy)



Funded by the  
European Union

# COSMIC WISPerS NETWORK



~ 70 *proposers*

Currently 300  
participants!

**COST Country(25)** : Albania , Austria , Bulgaria , Croatia , Cyprus , Czech Republic , Denmark , Estonia , France , Germany , Hungary , Israel , Italy , Malta , Netherlands , Norway , Poland , Portugal , Romania , Slovenia , Spain , Sweden , Switzerland , Turkey , United Kingdom  
**International Partner Country(7)** : Australia, Chile, China, Japan, South Africa, South Korea, United States

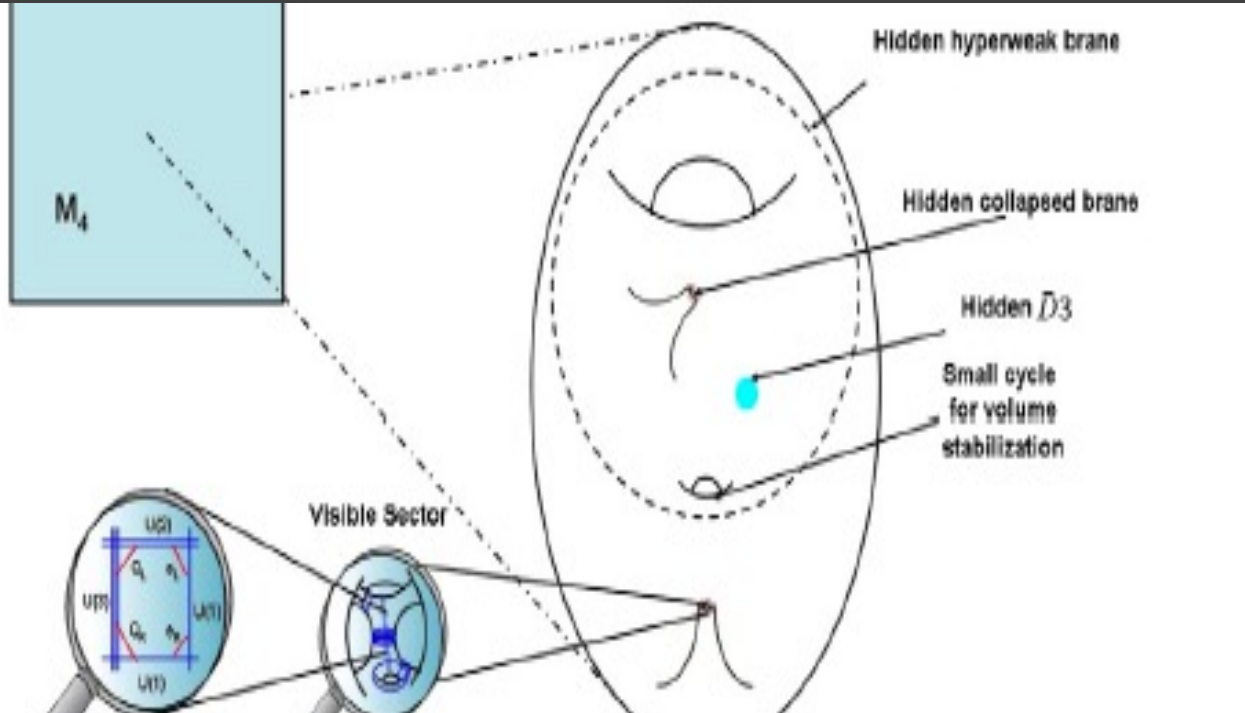


# WISPs

WISPs are very Weakly Interacting Slim ( $m < \text{GeV}$ ) Particles which emerge in several extensions of the Standard Model of Particle Physics.

## CHALLENGE

The aim of this Action is an exhaustive study of these WISPs, notably axions, axion-like particles (ALPs) and dark photons, ranging from their theoretical underpinning, over their indirect observational consequences in astrophysics, to their search at colliders and beam-dump and their direct detection in laboratory experiments.



WG Leaders

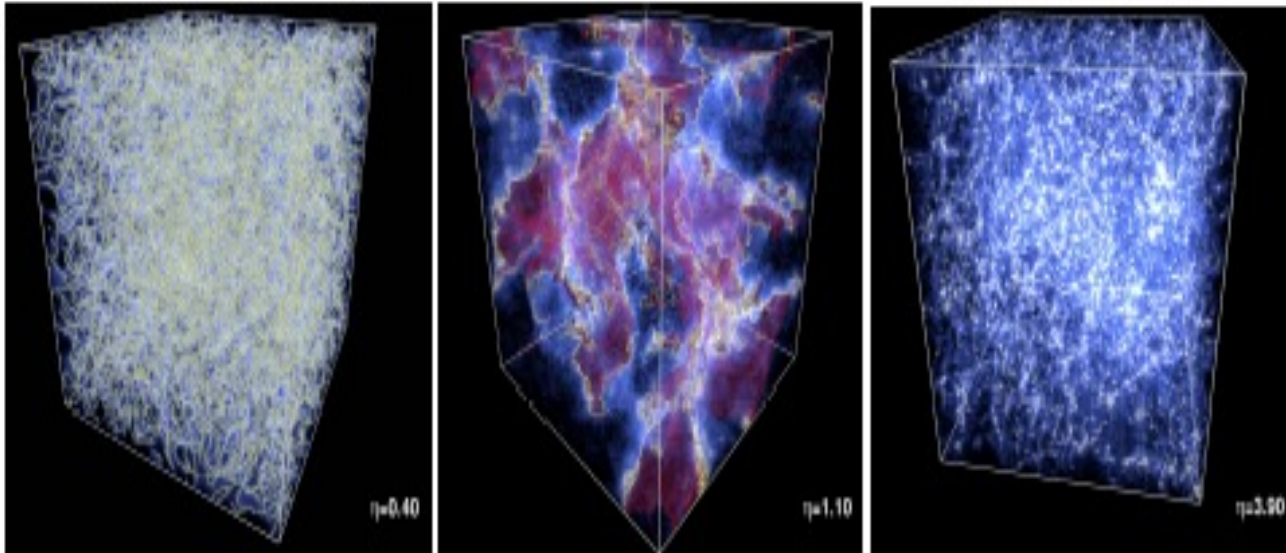
Michele Cicoli (Bologna Univ., IT)  
Sophie Renner (Glasgow Univ., UK)

82 participants

## WG1: THEORY AND MODEL BUILDING

Determine the nature, number, masses and couplings of WISPs that arise in well-motivated theories of fundamental physics, and in particular within string compactifications that join moduli stabilisation with (semi)-realistic matter sectors





### WG Leaders

Edoardo Vitagliano (Hebrew Univ. IS)  
Javier Redondo (Zaragoza Univ., ES)

172 participants

WG2: DARK  
MATTER AND  
COSMOLOGY

Obtain precise predictions of axion and WISP DM relic abundance and identify distinguishing features of WISP DM in Large Scale Structure data



# WG3: WISPs IN ASTROPHYSICS

Deepen the studies of the signatures of WISPs in astroparticle physics. These include WISP oscillations into photons, WISP-induced energy loss in stellar systems and signatures from gravitational waves and from primordial black-hole superradiance.

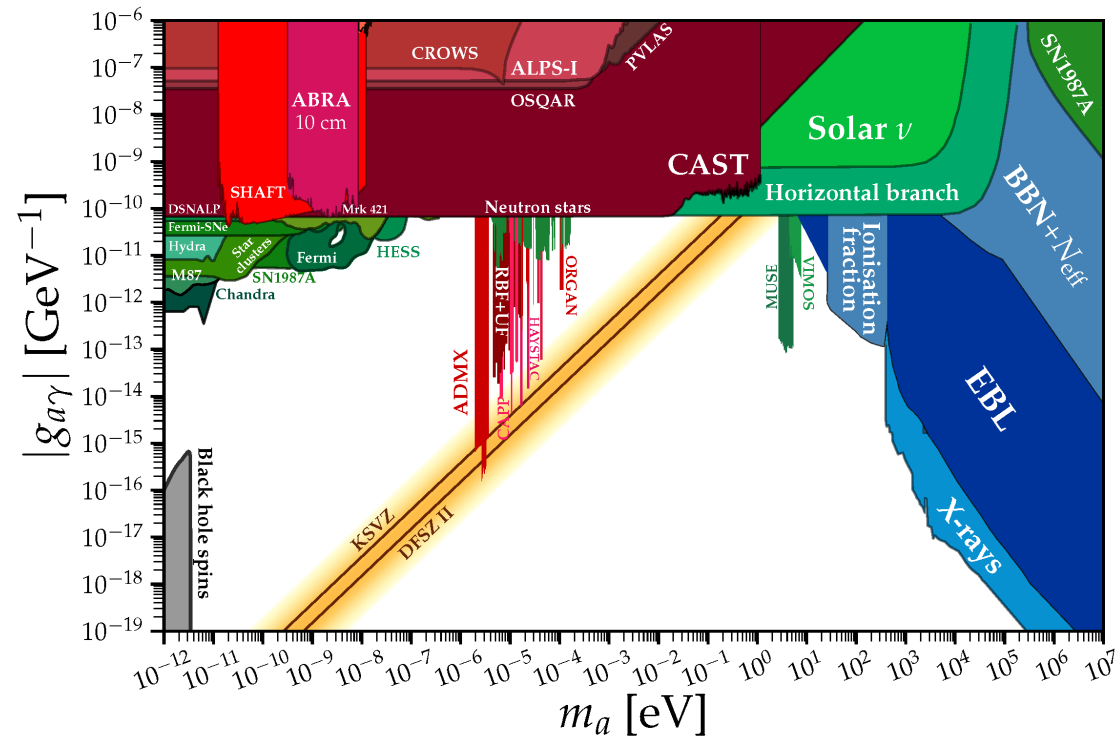
**WG Leaders**

Maurizio Giannotti (UNIZAR, ES)  
Oscar Straniero (INAF, IT)

107 participants

# WG4: DIRECT WISPs SEARCHES

Produce a complete, updated and revised summary of the status of WISP searches, highlighting parts of the parameter space, models or couplings that are not under test by present or future searches. Outline a roadmap to WISP discovery and a way to disentangle among different WISP models



**WG Leaders**

Claudio Gatti (LNF, IT)  
Marin Karuza (Rijeka Univ. , HR)

110 participants

## WG5: DISSEMINATION AND OUTREACH

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Enhance the dissemination and communication of the results, and to structure outreach activities to attract public awareness to the challenges and achievements in astro-particle physics.



**WG Leaders**

**Olga Mena (IFIC, ES)**

Science Communication Coordinator

**Loredana Gastaldo (Heidelberg Univ , DE)**

**69 participants**



# DELIVERABLES (from MoU)

Deliverable number	Deliverable title	WG number	Deliverable date (months)
D1.1	Draft Report on theory and pheno	1	12
D1.2	Interim Report on theory and pheno	1	24
D1.3	Final Report on theory and pheno	1	48
D2.1	Draft Report on DM and cosmology	2	12
D2.2	Interim Report on DM and cosmology	2	24
D2.3	Final Report on DM and cosmology	2	48
D2.4	Public code to simulate axion effects on LSS	2	40
D3.1	Draft Report on astroph.	3	12
D3.2	Interim Report on astroph.	3	24

D3.3	Final Report on astroph.	3	48
D4.1	Draft Report on direct	4	12
	detection		
D4.2	Interim Report on direct	4	24
	detection		
D4.3	Final Report on direct	4	48
	detection		
D4.4	Report on Technologies	4	36
	Forums		
D5.1	Action webpage, twitter and	5	6
	repositories		
D5.2	Set Dissemination	5	6, 18,30
	and Communication Scheme		
D6.1	Lecture notes of the	1,2,3,4	12,24,32,48
	training schools		
D7.1	Final White Paper on	1,2,3,4	48
	the Physics case		

## HORIZONTAL COMMITTEES



**Grant Evaluation Committee:** provides to the Action MC a proposal of selected grants and amounts for their approval

**Grant Awarding Coordinator:** **Venelin Kozhuharov** (Sofia Univ., BG)



**Young Researchers and Innovators Representative Council:** involve the ECI in the management of the Action and in organization of the Activities

**Coordinator:** **Joshua Eby** (Stockholm Univ., SW)



**Gender and Diversity Advisor:** monitor the gender balance and provide a plan to implement gender balance

**Deniz Sunar Cerci** (Adiyaman Univ., TR)

- **Journal Club Organizers:** Maria Benito Castano (Tartu Obs., EE), Michele Tammaro (Jozef Stefan Inst., SI)
- **Colloquium Organizers:** Arturo de Giorgi (Inst. De Fis. Teor, ES), Giuseppe Lucente (Bari Univ., IT) , Hugo Tercas (Ist. de Plasma, Lisboa, PT)
- **Newsletter Editors:** Damiano Fiorillo (NBI, Copenhagen, DE), Giovanni Grilli de Cortona (INFN, IT)

All events announced on the webpage [www.cosmicwispers.eu](http://www.cosmicwispers.eu)



## CORE GROUP

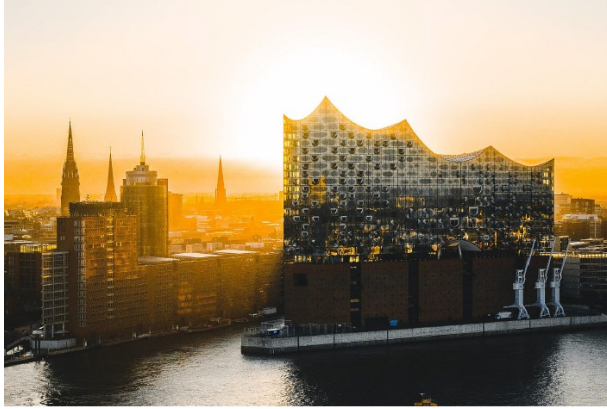
The Action MC decided to delegate part of their power to a **Core Group** that may carry-on day by day management and urgency cases

The Core Group is constituted by Chair, Vice-Chair, WG Leaders, Grant Holder Scientific Repr., Science Comm. Coordinator, Grant Award. Coord., Young Researc. Council Repres., Gender Advisor

## WHAT YOU CAN DO FOR THE ACTION?

- Advertise the Action on social media and through press release
- Ask your colleagues and collaborators to register
- Post interesting events and papers on twitter and to the e-mail
- Put acknowledgements on your publication: "This article/publication is based upon work from COST Action COSMIC WISPerS CA 21106, supported by COST (European Cooperation in Science and Technology)"
- Use Action Logo and COST visual identity in your talks
- .....

# 2024 EVENTS



1-2 Febr: WG Meeting  
(DESY, HH, DE)



10-13 June: Training School  
(Lubjiana,SI)



3-6 Sept: General Meeting  
+ MC Meeting (Istanbul,TR)

## A quick look to the CA21106 Working Group Meeting program

Today there will be the plenary session and 4 parallel sessions corresponding to the different Working Groups:

- WG1: Theory and Model Building [Convenors: Michele Cicoli, Sophie Renner]
  - WG2: Dark Matter and Cosmology [Convenors: Edoardo Vitagliano, Javier Redondo]
  - WG3: Astrophysics [Convenors: Maurizio Giannotti, Oscar Staniero]
  - WG4: Direct Searches [Convenors: Claudio Gatti, Marin Karuza]
- } joint
- Tomorrow morning there will be also review on WISP searches the different and round table.
  - Tomorrow afternoon there will be the Technology Forum on Quantum Technologies for WISPs



PLEASE SIGN EVERY MORNING THE ATTENDANCE LIST

WE HOPE YOU ENJOY THE MEETING!

